REMARKS

Claims 1-31 are pending in the application of which Claims 1, 13 and 21 are independent. Claim 21 is amended to correct a typographical error. The following comments address all stated grounds for rejection, and the Applicants respectfully submit that the presently pending claims, as identified above, are now in a condition for allowance.

Claim Rejections under 35 U.S.C. § 112

Claims 21-31 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention. More specifically, Claim 21 stands rejected for an improper antecedent basis with respect to the feature of "said control optical switch" recited in line 11.

Applicants respectfully traverse the rejection of these claims under 35 U.S.C. § 112, second paragraph by amending Claim 21 to correct the typographical error identified by the Examiner. Applicants note the amendment to Claim 21 does not address any art rejection. In view of the forgoing amendment to Claim 21, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of Claims 21-31 under 35 U.S.C. § 112.

Claim Rejections under 35 U.S.C. § 103

Claims 1-31 stand rejected under 35 U.S.C. § 103(a). For the ease of the discussion below, each rejection under 35 U.S.C. § 103(a), is discussed by related claim set and by distinct combination of applied references.

IA. Rejection of Claims 1-12 and 21-31 under 35 U.S.C. § 103(a):

Claims 1-12 and 21-31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0191247 of Lu, *et al.* (hereinafter "Lu") in view of U.S. Patent No. 6,324,162 of Chaudhuri (hereinafter "Chaudhuri"). Applicants respectfully traverse this rejection and contend that neither Lu nor Chaudhuri alone or in combination detract from the patentability of Claims 1-12 and 21-31.

Claims 2-12 depend directly or indirectly upon Claim 1 and therefore incorporate the novel features of Claim 1.

Claims 21-31 are directed to computer readable medium claims that parallel the method claims of Claims 1-12.

Claim 1 is directed to a method for handling a failure of an established circuit in a switch communication network having an optical layer for photonic transport of data to avoid end-to-end tear down and re-establishment of the established circuit. The method includes, amongst other steps, the step of detecting a failure of the established circuit between a first optical node and a second optical node of the established circuit by any of the first and second optical nodes. Performance of the method reports the failure of the established circuit to a control node in the optical layer by one of the first optical node and the second optical node and the control optical node initiates restoration of the established circuit between the first optical node and the second optical node of the established circuit. Neither Lu nor Chaudhuri, alone or in combination, teach or suggest each and every step of independent Claim 1.

Lu discloses in Figure 5 that the node around the fault is labeled as a Sender node (D node), which is a node downstream of the fault, and a Chooser node (C node), which is the node upstream of the fault. *See*, Lu, paragraph 80. Lu also discloses that the Sender node (D node) detects the fault and sends it to the Chooser node (C node). *See*, Lu, paragraph 83. Lu further discloses that the Chooser node (C node) builds the table of possible restoration routes and optical characteristics of those routes. *See*, Lu, paragraph 84. Lu does not teach or suggest detecting the failure of the established circuit between the first optical node and the second optical node of the established circuit by any of the first and second optical nodes as recited in Claim 1.

Further, the Lu reference fails to teach or suggest a control node initiates restoration of the established circuit between the first optical node and the second optical node of the established circuit as recited in Claim 1. In contrast, the Lu reference teaches a restoration technique that avoids restoration of the established circuit between the first optical node and the second optical node. For example, the Lu reference teaches when a failure of the established circuit between the C node and the D node is detected the failed established circuit between the C and D node is not restored but rather is rerouted around the established circuit between the C node and the D node. Figure 6 of the Lu reference presents possible restoration routes around the fault shown in Figure 5. As shown in the column entitled "route" of Figure 6 restoration does not include restoration of the established link between the C node and the D node. Hence, the Lu reference does not teach or suggest a control node initiating restoration of the established

circuit between the first optical node and the second optical node of the established circuit that detected the failure of the established circuit between those two nodes.

The Chaudhuri reference is cited to cure the factual deficiencies of the Lu reference. More specifically, the Chaudhuri reference is cited for teaching or suggesting the step of detecting the failure of the established circuit between the first optical node and the second optical node of the established circuit by any of the first and second optical nodes.

The Chaudhuri reference teaches path restoration of a mesh based optical network. More specifically, Chaudhuri teaches, with reference to Figure 1, that upon receipt at the node 12A of an indication of a failure in the link 14_9, the node 12A inserts a standard path alarm indication signal for receipt at the end node 12E. Then, node 12A checks for the availability of a restoration channel on the link 14_9. Should an available restoration channel exist, then the node 12A accomplishes automatic restoration on that existing channel and node 12D does likewise. In other words, in accordance with the teachings of the Chaudhuri reference, the node that detects the failure reports the failure to a control node and the node that detected the failure then initiates restoration.

In contrast to the Chaudhuri reference, the method of Claim 1 includes, amongst other steps, the step of reporting the failure to a control node and the control node initiates restoration of the established circuit between the first optical node and the second optical node of the established circuit. Moreover, when the end node 12E of Chaudhuri initiates restoration of the established circuit it does so without initiating restoration of the established circuit between the first optical node and the second optical node of the established circuit. That is, the end node 12E uses a predefined path which circumvents the link or circuit which failed between the two nodes detecting the failure and thereby avoiding initiation of an act to restore the established circuit between the first optical node and the second optical node.

Neither the Lu reference nor the Chaudhuri reference alone or in combination, teach or suggest each and every element of Claim 1. The Lu reference fails to teach or suggest detecting the failure of an established circuit between a first optical node and a second optical node of the established circuit by any of the first and second nodes and fails to teach or suggest a control optical node initiates restoration of the established circuit between the first optical node and the second optical node of the established circuit. The Chaudhuri reference fails to cure the factual deficiencies of the Lu reference because the Chaudhuri reference fails to teach or suggest the control optical node initiates restoration of the established circuit between a first optical node

and a second optical node of the established circuit. For at least these reasons, Applicants contend neither the Lu reference nor the Chaudhuri reference, alone or in combination, detract from the patentability of Claims 1-12 and 21-31. Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of Claims 1-12 and 21-31 under 35 U.S.C. § 103(a).

IB. Rejection of Claim 13-20 under 35 U.S.C. § 103(a):

Claims 13-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lu in view of Chaudhuri. Applicants respectfully traverse this rejection and contend that neither Lu nor Chaudhuri, alone or in combination, do not detract from the patentability of Claims 13-20.

Claim 14-20 depend directly or indirectly upon Claim 13 and thereby incorporate the patentable features of Claim 13.

Claim 13 is directed to a method for restoring an established circuit in a communication network. The method includes the steps of detecting a failed trunk or channel between a first optical node and a second optical node of the communication network and reporting the detected failed trunk or channel to a control optical node. The detection of the failed trunk or channel is made by any of the first optical node and the second optical node and one of the nodes is the control node. The method includes the step of the control node selecting an alternative trunk coupled between the first optical node and the second optical node to restore the established circuit. Neither the Lu reference nor the Chaudhuri reference, alone or in combination, teach or suggest each and every step of Claim 13.

Lu does not teach or suggest detecting the failure of a trunk or a channel between a first optical node and a second optical node wherein the detection is made by any of the first and second optical nodes as recited in Claim 13. Further, the Lu reference fails to teach or suggest a control node, which is one of the first or second optical nodes, that selects an alternative trunk coupled between the first optical node and the second optical node to restore the established circuit as recited in Claim 13. In contrast, the Lu reference teaches a restoration technique that avoids restoration of the established circuit between the first optical node and the second optical node. For example, the Lu reference teaches when a failure of the established circuit between the C node and the D node is detected the failed established circuit between the C and D node is not restored but rather is rerouted around the established circuit between the C node and the D node. Figure 6 of the Lu reference presents possible restoration routes around the fault shown in

Figure 5. As shown in the column entitled "route" of Figure 6 restoration does not include restoration of the established link between the C node and the D node. Hence, the Lu reference does not teach or suggest a control node, which is one of the first or second optical nodes, that selects an alternative trunk coupled between the first optical node and the second optical node to restore the established circuit.

The Chaudhuri reference is cited to cure the factual deficiencies of the Lu reference. More specifically, the Chaudhuri reference is cited for teaching or suggesting the step of detecting a failed trunk or channel between the first optical node and the second optical node of the communication network wherein the detection is made by any of the first optical node and the second optical node.

The Chaudhuri reference teaches path restoration of a mesh based optical network. More specifically, Chaudhuri teaches, with reference to Figure 1, that upon receipt at the node 12A of an indication of a failure in the link 14_9, the node 12A inserts a standard path alarm indication signal for receipt at the end node 12E. Then, node 12A checks for the availability of a restoration channel on the link 14_9. Should an available restoration channel exist, then the node 12A accomplishes automatic restoration on that existing channel and node 12D does likewise. In other words, in accordance with the teachings of the Chaudhuri reference, the node that detects the failure reports the failure to a control node and the node that detected the failure then initiates restoration.

In contrast to the Chaudhuri reference, the method of Claim 13 includes, amongst other steps, the steps of reporting the detected failed trunk to the control node and the control node selects an alternative trunk coupled to the first optical node and the second optical node to restore the established circuit. In accordance with Claim 13, the control node is one of the first optical node or the second optical node. Chaudhuri does not teach or suggest the control node is one of the one of the first optical node or the second optical node. Moreover, when the end node 12E of Chaudhuri initiates restoration of the established circuit it does so without initiating restoration of the established circuit between the first optical node and the second optical node of the established circuit. That is, if the end node 12E takes an action to restore the path it uses a predefined path which circumvents the link or circuit which failed between the first and second optical node thus avoiding the selection of an alternative trunk between the first and second nodes.

Neither the Lu reference nor the Chaudhuri reference alone or in combination, teach or suggest each and every element of Claim 13. The Lu reference fails to teach or suggest detecting the failure of the trunk or the channel between a first optical node and a second optical node wherein the detection is made by any of the first and second optical nodes and fails to teach or suggest a control node, which is one of the first or second optical nodes, selects an alternative trunk coupled between the first optical node and the second optical node to restore the established circuit. The Chaudhuri reference fails to cure the factual deficiencies of the Lu reference because the Chaudhuri reference fails to teach or suggest the control node, which is one of the first or second optical nodes, selects an alternative trunk coupled between the first optical node and the second optical node to restore the established circuit. For at least these reasons, Applicants contend neither the Lu reference nor the Chaudhuri reference, alone or in combination, detract from the patentability of Claims 13-20. Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of Claims 13-20 under 35 U.S.C. § 103(a).

IIA. Rejection of Claims 1-10, 12, and 21-30 under 35 U.S.C. § 103(a):

Claims 1-10, 12, and 21-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,763,190 of Agrawal, *et al.* (hereinafter "Agrawal") in view of Chaudhuri. Applicants respectfully traverse this rejection and contend that neither Agrawal nor Chaudhuri, alone or in combination, detract from the patentability of Claims 1-10, 12, and 21-30.

Claims 2-10 and 12 depend directly or indirectly upon Claim 1 and therefore incorporate the patentable features of Claim 1.

Claims 21-30 are directed to a method embodied on a computer readable medium which parallels the method of Claims 1-10 and 12.

The Agrawal patent teaches path restoration in the event of a link or path failure two nodes that avoids restoration of the failed link or path between the two nodes in an optical communications network. More specifically, the Agrawal patent teaches that in the event of a circuit failure between node A and node B in a path defined as node A to node D, the restoration path for the established circuits between node A and node D would have a path defined as node

A to node F to node B to node C to node D, thus avoiding restoration of the established circuit between node A and node B.

The Office Action notes the Agrawal reference does not teach the detection of the failure of the established circuit between the first and second optical nodes is made by any of the first and second optical nodes. To cure this factual deficiency, the Chaudhuri reference is cited for teaching such an operation. Nevertheless, the Chaudhuri reference like the Agrawal reference does not rely upon a control optical node to which the fault is reported to initiate restoration of the established circuit between the first optical node and the second optical node of the established circuit.

The Chaudhuri reference is cited for teaching or suggesting the step of detecting the failure of the established circuit between the first optical node and the second optical node of the established circuit by any of the first and second optical nodes. The Chaudhuri reference teaches path restoration of a mesh based optical network. More specifically, Chaudhuri teaches, with reference to Figure 1, that upon receipt at the node 12A of an indication of a failure in the link 14_9, the node 12A inserts a standard path alarm indication signal for receipt at the end node 12E. Then, node 12A checks for the availability of a restoration channel on the link 14_9. Should an available restoration channel exist, then the node 12A accomplishes automatic restoration on that existing channel and node 12D does likewise. In other words, in accordance with the teachings of the Chaudhuri reference, the node that detects the failure reports the failure to a control node and the node which detected the failure then initiates restoration. The Chaudhuri reference further teaches if the end node initiates restoration of the path it does so by using an alternative circuit that avoids re-establishing a failed communication link between the node or nodes detecting such failure and rather re-routes the path from the source node to a destination node which avoids establishing a circuit between the two nodes associated with the failed circuit.

In contrast to the Agrawal reference and the Chaudhuri reference the method of Claim 1 reports the failure of an established circuit between a first optical node and a second optical node to a control optical node, and the control optical node initiates restoration of the established circuit between the first optical node and the second optical node of the established circuit. In other words, in the event of a failure in an established circuit between node A and node B of a path ABCD, the control optical node initiates restoration of the established circuit between node A and node B of a path defined by node A to node B to node C to node D. Neither the Agrawal reference nor the Chaudhuri reference teach or suggest such an operation.

For at least these reasons, neither the Agrawal patent nor the Chaudhuri patent teach or suggest each and every element of Claims 1-10, 12 and 21-20. Accordingly, neither the Agrawal patent nor the Chaudhuri patent alone or in combination, detract from the patentability of Claims 1-10, 12 and 21-30. Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of Claims 1-10, 12, and 21-30 under 35 U.S.C. § 103(a).

IIB. Rejection of Claims 13-19 under 35 U.S.C. § 103(a):

Claims 13-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Agrawal in view of Chaudhuri. Applicants respectfully traverse this rejection and contend that neither Agrawal nor Chaudhuri, alone or in combination, detract from the patentability of Claims 13-19.

Claims 14-19 depend directly or indirectly upon Claim 13 and thereby incorporate the patentable features of Claim 13.

The Agrawal patent teaches path restoration in the event of a link or path failure between two nodes that avoids restoration of the failed link or path between the two nodes in an optical communications network. More specifically, the Agrawal patent teaches that in the event of a circuit failure between node A and node B in a path defined as node A to node D, the restoration path for the established circuits between node A and node D would have a path defined as node A to node F to node B to node C to node D, thus avoiding restoration of the established circuit between node A and node B.

The Office Action notes the Agrawal reference does not teach the detection of a failed trunk or channel between the first and second optical nodes is made by any of the first and second optical nodes. To cure this factual deficiency, the Chaudhuri reference is cited for teaching such an operation. Nevertheless, the Chaudhuri reference like the Agrawal reference does not rely upon a control optical node to which the fault is reported to select an alternative trunk coupled to the first optical node and the second optical node to restore the established circuit.

The Chaudhuri reference is cited for teaching or suggesting the step of detecting the failed trunk or channel between the first optical node and the second optical node of the communication network by any of the first and second optical nodes. The Chaudhuri reference teaches path restoration of a mesh based optical network. More specifically, Chaudhuri teaches,

with reference to Figure 1, that upon receipt at the node 12A of an indication of a failure in the link 14_9, the node 12A inserts a standard path alarm indication signal for receipt at the end node 12E. Then, node 12A checks for the availability of a restoration channel on the link 14_9. Should an available restoration channel exist, then the node 12A accomplishes automatic restoration on that existing channel and node 12D does likewise. In other words, in accordance with the teachings of the Chaudhuri reference, the node that detects the failure reports the failure to a control node and the node which detected the failure then initiates restoration. The Chaudhuri reference further teaches if the end node initiates restoration of the path restoration occurs by using an alternative circuit that avoids re-establishing a failed communication link between the node or nodes detecting such failure and rather re-routes the path from the source node to a destination node which avoids establishing a circuit between the two nodes associated with the failed circuit.

In contrast to the Agrawal reference and the Chaudhuri reference the method of Claim 13 reports the failed trunk or channel between a first optical node and a second optical node to a control optical node, and the control optical node selects an alternative trunk between the first optical node and the second optical node to restore the established circuit. In other words, in the event of a failure in an established circuit between node A and node B of a path ABCD, the control optical node initiates restoration of the established circuit by restoring a trunk between node A and node B of a path defined by node A to node B to node C to node D. Neither the Agrawal reference nor the Chaudhuri reference teach or suggest such an operation.

For at least these reasons, neither the Agrawal patent nor the Chaudhuri patent teach or suggest each and every element of Claims 13-19. Accordingly, neither the Agrawal patent nor the Chaudhuri patent alone or in combination, detract from the patentability of Claims 13-19. Accordingly, Applicants respectfully request the Examiner to reconsider and withdraw the rejection of Claims 13-19 under 35 U.S.C. § 103(a).

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue. If, however, the Examiner considers that further obstacles to allowance of these claims persist, we invite a telephone call to Applicant's representative.

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Respectfully submitted,

By David R Burns

David R. Burns
Registration No. 46,590
LAHIVE & COCKFIELD, LLP
28 State Street
Boston, Massachusetts 02109
(617) 227-7400
(617) 742-4214 (Fax)
Attorney for Applicant